

[Utility model registration claim]

[Claim 1] Luminescence equipment for bicycles which is fixed at the tip of the magneto coil attached in a post-fork or stay of a bicycle removable, the lamp which it comes to connect with this magneto coil, the elastic body which curves according to the centrifugal force accompanying rotation of a wheel while coming to be attached in the spoke of the above-mentioned bicycle removable, and this elastic body, and is characterized by coming to have the above-mentioned magneto coil and the magnet which comes to counter.

[Detailed explanation of a design]

[0001]

[Industrial Application]

This design is related with the luminescence equipment for bicycles used in order to make a third person recognize the existence of a bicycle which carries out Nighttime transit.

[0002]

[Description of the Prior Art]

Conventionally, the generator of the structure generated by rolling Rota by tire rotation is attached in a bicycle, and there is a thing currently made as [ light up / by the generation of electrical energy with this generator / a headlamp or a tail lamp ] or a thing which makes the above-mentioned headlamp and a tail lamp turn on by the dry cell in it. However, if it is in some which the noise generates in the case of rotation of Rota, and the burden at the time of mechanical resistance rowing a pedal greatly by the generator of such structures or the lighting approach of a light is not only large, but are depended on the above-mentioned dry cell, after exhausting, it is necessary to exchange a new dry cell. In the former, since it has such a technical problem, it is the actual condition which the frequency which carries out bicycle transit by non-lamplight became high at Nighttime, and many traffic accidents have generated owing to this. Then, in order to solve such a conventional technical problem, what used the generator of a non-contact mold as the component of a bicycle in recent years is proposed. for example, to JP, 63-32975, U A magneto coil is arranged in a revolving shaft while fixing many magnets in the hub of a bicycle. The structure of making a headlamp and a tail lamp turning on with the electromotive force by the magnet and the magneto coil is indicated. To JP, 64-40270, U the rim top of a wheel -- a magnet -- N pole; -- while arranging alternately with the south pole, a magneto coil is arranged in the location which countered these magnets, and the generator of the structure of generating electromotive force too with these magnets and a magneto coil is indicated. Moreover, the light equipment of the structure of forming two or more magnets in the spoke of a wheel in the shape of a periphery which fixes a magneto coil to a fork on the other hand, is made to generate electromotive force like a thing given [ above-mentioned / two ] in an official report, and is turned on by this is indicated by JP, 4-78677, A. According to such structures, surely the above-mentioned various technical problems are solved, and the burden and noise to an operator are lost, and it is wide opened also from troublesomeness called exchange of a dry cell. Moreover, a solar battery is used in addition to what is depended on the structure indicated by each above-mentioned official report, and how to turn on a light with the electrical and electric equipment charged by this can be considered.

[0003]

[Problem(s) to be Solved by the Device]

However, although aiming at using it mainly as a headlamp of a bicycle will also be considered as a cause with the conventional structure mentioned above, each needs to change the structure of the conventional bicycle itself and it cannot but become cost quantity from the ability not to equip easily [ the conventional bicycle ] extremely. Moreover, when using a solar battery, even if it is, when the life of the rechargeable battery which does not necessarily restrict that a user's bicycle is put on the location where sunlight hits, and is used for this discards short, it also has the danger of having a bad influence on an environment.

[0004]

Then, it is proposed in order that this design may solve the technical problem which the Prior art mentioned above has. While it can attach easily [ the bicycle currently manufactured and sold from before ], and it can suppose that it is very cheap, and being able to use it for a long period of time further, continuing it not only abolishing the burden and noise to an operator, but As a result, it aims at offering the luminescence equipment for bicycles which can control the traffic accident of a bicycle enough.

[0005]

[Means for Solving the Problem]

It carries out [ that this design is proposed in order to attain the purpose which mentioned above, and it is fixed at the tip of the magneto coil attached in a post-fork or the stay of a bicycle removable, the lamp which it comes to connect with this magneto coil, the elastic body which curves according to the centrifugal force accompanying rotation of a wheel while coming to be attached in the spoke of the above-mentioned bicycle removable, and this elastic body, and it comes to have the above-mentioned magneto coil and the magnet which come to counter, and ] as the description.

[0006]

[Function]

The magneto coil which it comes to connect with a lamp according to the luminescence equipment for bicycles concerning the above-mentioned design is attached in a post-fork or stay of a bicycle removable, since the elastic body with which it comes to fix a magnet at a tip on the other hand is also attached in the spoke of a bicycle removable, does not need to change the configuration of the bicycle itself at all, and can attach it easily [ the bicycle marketed conventionally ]. And when the above-mentioned magneto coil and a magnet carry out field opposite by rotation of a wheel, electromotive force occurs, and the above-mentioned lamp lights up. That is, the above-mentioned lamp blinks by rotation of a wheel. And the path clearance of a magnet and a magneto coil can be extended for the electrical potential difference which becomes high in proportion to the rotational speed of a wheel since it curves according to the centrifugal force accompanying [ about this design, the above-mentioned magnet is being further fixed to the elastic body, and ] rotation of a wheel in this elastic body in proportion to the rotational speed of this bicycle by the curve of this elastic body, and electromotive force can always be set constant by this. Therefore, according to the luminescence equipment for bicycles concerning this design, breakage of the lamp accompanying the rise of the rotational speed of a wheel can be prevented effectively.

[0007]

**[Example]**

It explains to a detail, referring to a drawing about the example of the luminescence equipment for bicycles concerning this design hereafter. First, the 1st example is explained. As shown in drawing 1, it comes to connect with the magnet 3 fixed at the tip of a flat spring 2, the magneto coil 4 which counter this magnet 3 and it comes to fix, and this magneto coil 4, and comes to consist of the fundamental configuration of the luminescence equipment 1 for bicycles concerning this 1st example LED (light emitting diode)5 as a lamp of this design.

**[0008]**

And as shown in drawing 2, the outline configuration of this luminescence equipment 1 for bicycles is specifically carried out from the above-mentioned flat-spring member 12 by which it is attached in the spoke S which constitutes the rear wheel of the bicycle which is not illustrated, and the magnet 3 is being fixed at the tip, and the generation-of-electrical-energy member 14 which is attached in the post-fork F of a bicycle through fixing metal 10, and is connected with the above LED 5. And spring section 12a by which, as for the above-mentioned flat-spring member 12, the above-mentioned magnet 3 is being fixed to the inferior surface of tongue at a tip, Twist section 12b which it comes to form in the end face of this spring section 12a, and make twist this spring section 12a 90 abbreviation, and it comes to form, This twist section 12b and flat-surface section 12c to which it comes to puncture insertion hole 11a by which a screw 11 is inserted in in the center coming continuously, 12d of bends which curve and become so that it may be twisted around the spoke S of a bicycle with this flat-surface section 12c coming continuously, While coming to puncture the insertion hole in which field opposite is carried out with the above-mentioned flat-surface section 12c coming [ 12d of this bend ] continuously, and the above-mentioned screw 11 is inserted and which is not illustrated The nut 15 (refer to drawing 3) with which this screw 11 is screwed on the location corresponding to this insertion hole consists of clinch section 12e which comes to carry out joining. In addition, the magnet 3 fixed to the inferior surface of tongue of the above-mentioned spring section 12a is made as [ counter / the revolving shaft of the wheel which is not illustrated ].

**[0009]**

On the other hand, as shown in drawing 2, it was fabricated in the shape of a block by the insulator, and the above-mentioned generation-of-electrical-energy member 14 became, and equips the interior with the magneto coil 4 wound around an iron core 13 and this iron core 13. And the above LED 5 is connected to this magneto coil 4. And the generation-of-electrical-energy member 14 constituted in this way is attached in the post-fork F of a bicycle through fixing metal 10. Tie-down plate section 10a in which this fixing metal 10 makes the end side halfway section of a long and slender metal plate come to curve in the shape of radii, and the above-mentioned generation-of-electrical-energy member 14 is attached, This tie-down plate section 10a and bend 10b wound around the periphery of the above-mentioned fork F coming continuously, It consists of clinch section 10c which carries out field opposite with one side face of the above-mentioned tie-down plate section 10a, and two insertion holes 16a and 16b in which the screw 16 for attaching this fixing metal 10 in Fork F at above-mentioned clinch section 10c, respectively the end face side of the above-mentioned tie-down plate section 10a is inserted are drilled.

Moreover, 10d of long holes in which the screw 17 for fixing the above-mentioned generation-of-electrical-energy member 14 and this fixing metal 10 is inserted is drilled in above-mentioned tie-down plate section 10a.

[0010]

According to the luminescence equipment 1 for bicycles concerning the 1st example constituted as mentioned above, the above-mentioned flat-spring member 12 can be freely adjusted in the die-length direction of Spoke S, and the direction of the circumference of a shaft of this spoke S, in order to set up physical relationship with the generation-of-electrical-energy member 14 attached in the fork F of this bicycle, while being able to attach easily [ the spoke S of the bicycle marketed conventionally ]. Moreover, similarly, while also being able to attach the generation-of-electrical-energy member 14 in Fork F easily through fixing metal 10, an attaching position can be adjusted through 10d of long holes drilled in tie-down plate section 10a which constitutes this fixing metal 10. And if it attaches in the bicycle which does not illustrate the luminescence equipment 1 for bicycles concerning such a configuration and a wheel is rotated, electromotive force occurs by approach with the above-mentioned magnet 3 and the iron core 13 which constitutes the generation-of-electrical-energy member 14, and LED5 will turn on the user of a bicycle, without receiving resistance to a pedal. And spring section 12a which constitutes the flat-spring member 12 is incurvated by the direction of drawing 2 Nakaya mark A according to the centrifugal force by the self-weight of a magnet 3, and rotation of a wheel as the rotational speed of the wheel of this bicycle rises. Since the path clearance of this magnet 3 and the iron core 13 which constitutes the generation-of-electrical-energy member 14 spreads gradually by this, the electrical potential difference of the electromotive force by the magnet 3 and the magneto coil 4 wound around the iron core 13 does not affect the rotational speed of a wheel at all. Therefore, possibility that LED5 will be damaged by restricted rotation of a wheel is effectively avoidable.

[0011]

Next, the luminescence equipment 20 for bicycles concerning the 2nd example of this design is explained.

This luminescence equipment 20 for bicycles is not the configuration that the flat spring 2 (flat-spring member 12) by which the magnet 3 was fixed at the tip is attached in one spoke S like the luminescence equipment 1 for bicycles concerning the 1st example of the above, but is the spoke S1 of two \*\*\*\*\*, and S2. It is characterized by coming to equip the flat-spring attachment component 22 fixed through fixing metal 21. In addition, it consists of the same configuration as what was explained in the 1st example of the above about other configurations.

[0012]

As the flat spring 23 which constitutes this luminescence equipment 20 for bicycles is shown in drawing 4, while being bent in the shape of L character, becoming and a magnet's 24 coming to paste the end face side of a thin metal plate a tip side inferior surface of tongue, the end face side bent in the shape of L character is set to insertion section 23a inserted into the slot which constitutes the flat-spring attachment component 22 mentioned later. Moreover, tie-down plate section 21a in which, as for the above-mentioned fixing metal 21, the flat-spring attachment component 22 is attached, It is formed in the right-and-left both sides of this tie-down plate section 21a, and is the spoke S1 of

the two above-mentioned \*\*\*\*\* and S2, respectively. The bends 21b and 21c inserted in the interior, It consists of a rear face of the above-mentioned tie-down plate section 21a, and the clinch sections 21d and 21e which come to counter coming [ these bends 21b and 21c ] continuously. and -- the core of the above-mentioned tie-down plate section 21a -- a spoke S1 and S2 21f of long holes in which the screw 25 for coming to be formed in the same direction for a long time, and fixing the flat-spring attachment component 22 and this fixing metal 21 is inserted is formed. the die-length direction and abbreviation -- moreover, in the right-and-left both sides of this tie-down plate section 21a, and each above-mentioned clinch sections 21d and 21e It is each spoke S1 and S2 by these each clinch sections 21d and 21e and this tie-down plate section 21a. The screwholes 26a and 27a of the right and left in which the screws 26 and 27 for carrying out grasping immobilization are inserted, respectively are drilled. In addition, it is the rear face of this fixing metal 21, and as shown in drawing 5 , joining of the nuts 28 and 28 which screws 25 and 26 screw on is carried out to the location corresponding to the above-mentioned screwholes 26a and 27a drilled in the above-mentioned clinch sections 21d and 21e.

[0013]

Moreover, while the nut which the screw 25 inserted in 21f of long holes which it comes to fabricate a whole configuration in the shape of an abbreviation rectangular parallelepiped with a synthetic-resin ingredient, and were formed in tie-down plate section 21a of the above-mentioned fixing metal 21 in the rear face screws and which is not illustrated pastes up the above-mentioned flat-spring attachment component 22, the crevice where said screw 25 is inserted and which is not illustrated is formed. Moreover, slot 22b of the shape of L character which inserts the end face of the flat spring 23 contained in receipt crevice 22a by which the above-mentioned flat spring 23 is contained, and this receipt crevice 22a is formed in the transverse plane of this flat-spring attachment component 22. When a flat spring 23 curves according to the centrifugal force by rotation of a wheel so that it may mention later, let the above-mentioned receipt crevice 22a be a tooth space acting as a failure. Moreover, the thickness of inferior lamella section 22c which forms this receipt crevice 22a is fabricated thin so that it may not have a bad influence on the line of magnetic force of the magnet 24 pasted up at the tip of a flat spring 23. Moreover, while blockading the above-mentioned receipt crevice 22a, the protective cover 29 which it comes to fabricate in the shape of a rectangle with the resin of transparency is attached in the transverse plane of the above-mentioned flat-spring attachment component 22 with screws 30 and 31.

[0014]

Fixing metal 21, the flat-spring attachment component 22, and a protective cover 29 are minded for the flat spring 23 which it comes to constitute as mentioned above, and it is the spoke S1 of a wheel, and S2. If it is made to attach It not only can attach easily [ a commercial bicycle ], but it minds 21f of long holes formed in fixing metal 21 like the luminescence equipment 1 for bicycles concerning said 1st example. The attaching position of the flat-spring attachment component 22 to this fixing metal 21 can be adjusted freely, and a magnet 24 and the iron core 13 which constitutes the generation-of-electrical-energy member 14 can be set as the most suitable path clearance by this. Moreover, this flat spring 23 is the spoke S1 of two \*\*\*\*\* and S2 as mentioned

above. Since it is blockaded with the flat-spring attachment component 22 and a protective cover 29 and does not expose outside while being attached through fixing metal 21 in between, the danger that the delicate physical relationship of a magnet 24 and the generation-of-electrical-energy member 14 will be easily changed by the mischief or contact with an obstruction can also be prevented effectively. The mud and dust which furthermore adhere by bicycle transit adhere to the above-mentioned flat spring 23 or a magnet 24, and the situation where a flat spring 23 does not curve correctly by rotation of a wheel as a result can also be prevented effectively.

[0015]

moreover, in addition to the fundamental configuration shown in drawing 1, the luminescence equipment for bicycles concerning this design like drawing 6 shown as the 3rd example The illuminance sensor 32 is formed through the controller 31 which it comes to connect with a magneto coil 4. Only when not fulfilling a predetermined illuminance by this illuminance sensor 32, you may be luminescence equipment 30 for bicycles which is constituted and becomes so that ON control of the switch 33 may be carried out through the above-mentioned controller 31 and LED5 may be turned on. While according to the luminescence equipment 30 for bicycles concerning such a configuration OFF control of the switch 33 is carried out through a controller 31 by the illuminance sensor 32 and LED5 is not turned on in the daytime, since ON control of the switch is carried out and LED5 lights up in the evening or night coming and not fulfilling a predetermined illuminance, it can consider as the luminescence equipment for bicycles without sense of incongruity.

[0016]

In addition, although explanation in said each example illustrated and explained the example which attached one elastic body with which the magnet was fixed to one or two spokes which constitute a wheel The luminescence equipment for bicycles concerning this design may come to attach two or more elastic bodies with which the magnet was fixed, and further Electronic circuitries, such as a capacitor, are prepared between a magneto coil and a lamp, and it is constituted and you may become so that the light may be pulse-switched on the light not but usual state switched on as mentioned above. Moreover, although LED was used as a lamp which constitutes this design from each above-mentioned example, this lamp is not necessarily limited to LED and may use other lamps.

[0017]

[Effect of the Device]

Since it is the configuration that do not contact the wheel of a bicycle but a lamp is turned on more nonresistant according to the luminescence equipment for bicycles concerning this design so that clearly also from explanation of each example mentioned above, it can prevent effectively that a lamp is not turned on by a bicycle user's intention. Moreover, since it is attached in a post-fork or stay of a bicycle removable and the elastic body with which it comes to fix a magnet at a tip on the other hand is also attached in the spoke of a bicycle removable, the magneto coil which it comes to connect with a lamp does not need to change the configuration of the bicycle itself at all, and can attach it easily [the bicycle marketed conventionally].

[0018]

And about this design, since it is fixed to the elastic body and this elastic body is estranged from a magneto coil according to the centrifugal force accompanying the rotational speed of a wheel, the

above-mentioned magnet can extend the path clearance of a magnet and a magneto coil in proportion to the rotational speed of this bicycle by alienation of the magnet according the electrical potential difference which becomes high in proportion to the rotational speed of a wheel to this elastic body, and can always set electromotive force constant by this. Therefore, according to the luminescence equipment for bicycles concerning this design, breakage of the lamp accompanying the rise of the rotational speed of a wheel can be prevented effectively.

[Brief Description of the Drawings]

[Drawing 1] Drawing 1 is the circuit diagram showing typically the fundamental configuration of the luminescence equipment for bicycles concerning the 1st example.

[Drawing 2] Drawing 2 is the decomposition perspective view of the luminescence equipment for bicycles concerning the 1st example.

[Drawing 3] Drawing 3 is the front view of the flat-spring member which constitutes the luminescence equipment for bicycles concerning the 1st example.

[Drawing 4] Drawing 4 is the decomposition perspective view of the luminescence equipment for bicycles concerning the 2nd example.

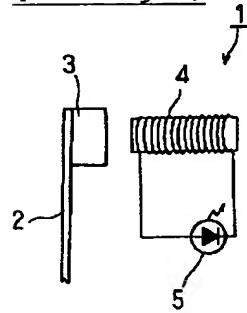
[Drawing 5] Drawing 5 is the rear view of the fixing metal which constitutes the luminescence equipment for bicycles concerning the 2nd example.

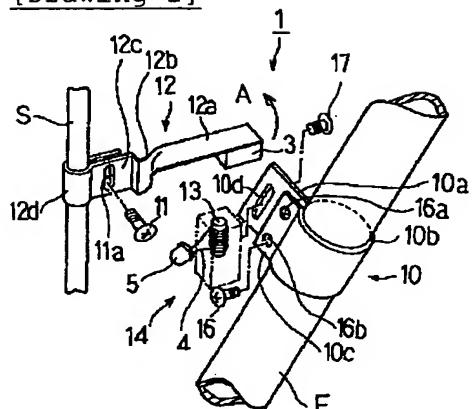
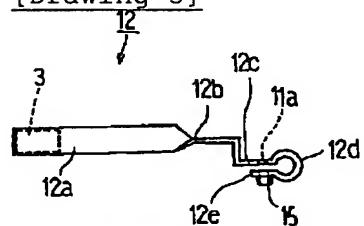
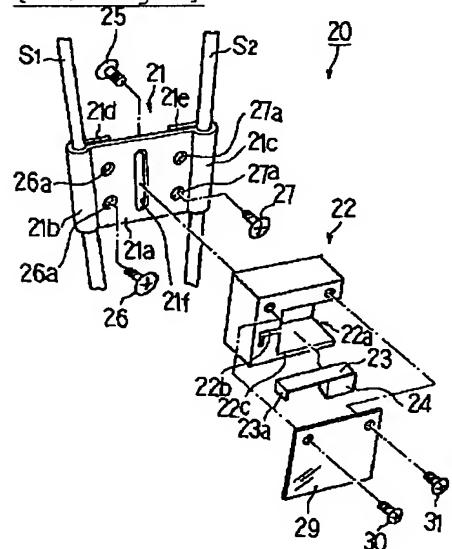
[Drawing 6] Drawing 6 is the circuit diagram showing typically the fundamental configuration of the luminescence equipment for bicycles concerning the 3rd example.

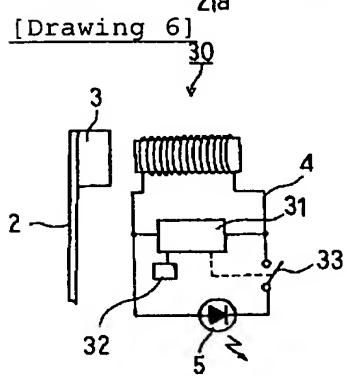
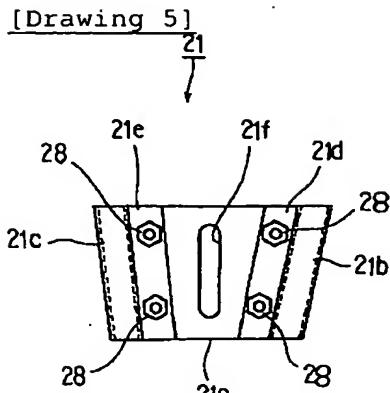
[Explanation of agreement]

- 1 Luminescence Equipment for Bicycles
- 2 Flat Spring
- 3 Magnet
- 4 Magneto Coil
- 5 LED
- 12 Flat-Spring Member
- 14 Power Plant
- 20 Luminescence Equipment for Bicycles
- 23 Flat Spring
- 24 Magnet

[Drawing 1]



[Drawing 2][Drawing 3][Drawing 4]



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